

# Navigating Graver



Graver Technologies

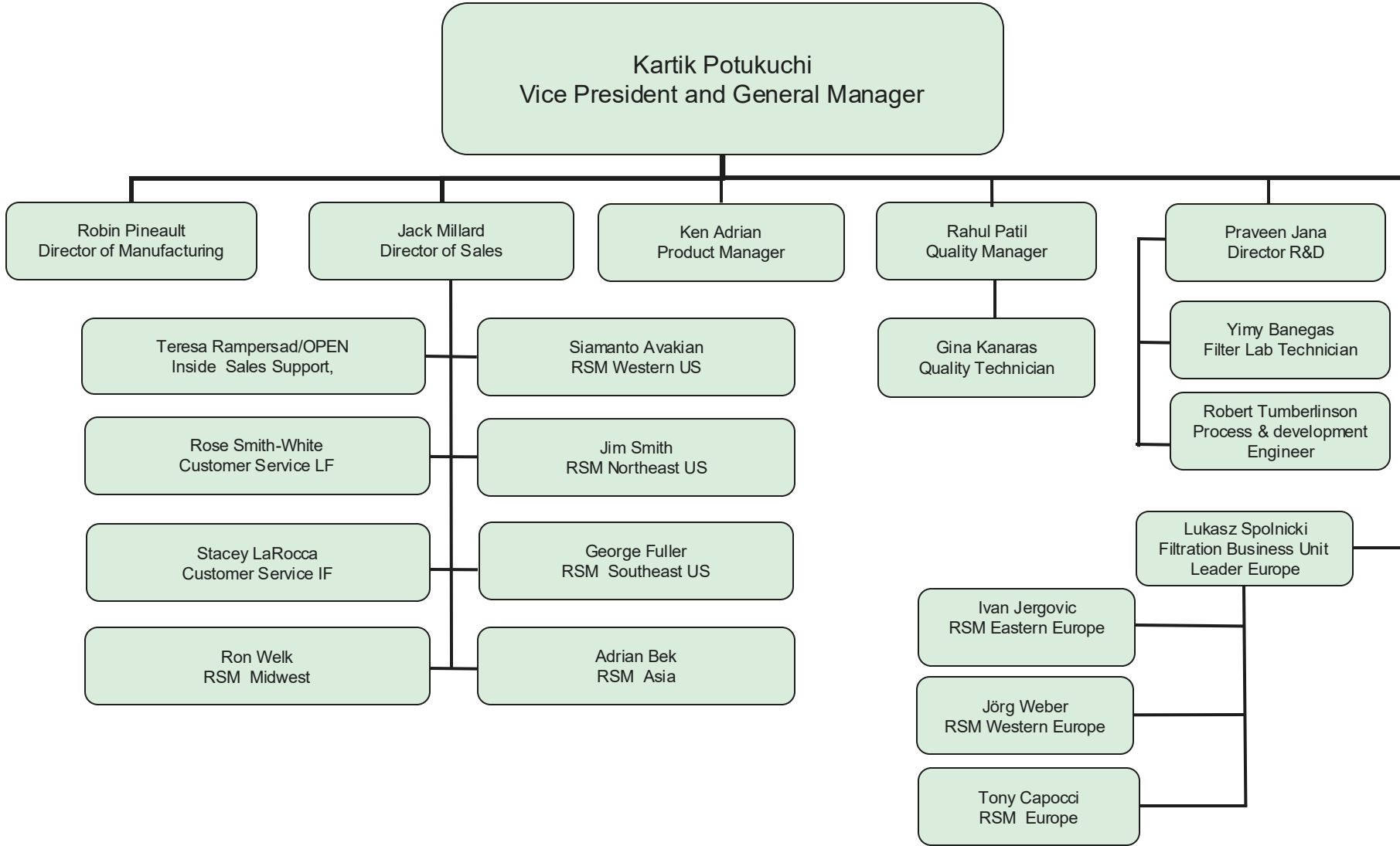
# Navigating Graver



## Doing Business With Graver

# Our Organization

LPF



## **Rose White-Smith**

- Order Entry for Europe, North America
- Emails Order Acknowledgements
- First line of Communication for Customers Phoning our 888 #
- Provides Shipping Status
- Provides Tracking Numbers
- Handles Majority of Expedite Requests
- Sends Proforma Invoices for the Entire World (except Asia)

## **OPEN (Teresa Rampersad)**

- Inside Sales Support
- Order Entry for Asia, Latin America
- Competitive Cross references
- Shipping status and documentation
- Proforma Invoices
- Backs up Rose (vacations, away from desk, on phone)
- Evening coverage for Asia

## **Stacey Perry**

- Based in New York.
- Order Entry for Air & Gas Products
- First Line of Communication for Air & Gas Product Issues, Expedites Request, Shipping, Tracking.
- Back up To Teresa and Rose on LPF products. Housing inquiries

# Customer Service

LPF

- Send to [Lorders@gravertech.com](mailto:Lorders@gravertech.com)
- Provide Purchase Order Number
- Order by nomenclature or F8 p/n
- Spell out special instructions
- Must specify ship method
- Must specify carrier or forwarder
- Provide complete ship-to address
- Provide a Person of Contact
- Specify any additional paperwork requirements
- [Lorders@gravertech.com](mailto:Lorders@gravertech.com) for HFNY

## Order Requirements

### MINIMUM ORDER

|                                                              |                                     |
|--------------------------------------------------------------|-------------------------------------|
| Tier 1                                                       | \$200.00 excluding shipping charges |
| Tier 2                                                       | \$300.00 excluding shipping charges |
| Tier 3                                                       | \$500.00 excluding shipping charges |
| <i>Smaller orders must be taken with credit card payment</i> |                                     |

### SPECIAL PRICING

To receive any special negotiated pricing, the SPA number must appear on the purchase order, or standard pricing will apply.

### PRIVATE LABELING

Changes to standard packaging and labeling may incur set-up /engineering charges up to \$500.

### PAYMENT TERMS

|                     |                                                              |
|---------------------|--------------------------------------------------------------|
| Tier 1              | Net 30 (See Terms and Conditions sheet for complete details) |
| Tier 2              | Net 30 (See Terms and Conditions sheet for complete details) |
| Tier 3              | Cash in Advance                                              |
| Delinquent Accounts | Cash in Advance                                              |

### FREIGHT TERMS

F.O.B. Shipping Point/Ex-Works Glasgow (International Shipments)

"Prepay and Add" orders will include a handling fee.

"Collect" shipments may be used to avoid handling fee.

*Customer must provide shipping preference and account number.*

Customs and Duties are the responsibility of the customer.

Shipping and freight forwarding instructions are required when the purchase order is placed to have it entered.

### RETURN POLICY

Customer Authorization number (CAF) must be obtained from Customer Service before returning goods. *All returns must be shipped prepaid. Minimum restocking charge is 25%. Goods must be in the original container and in salable conditions to be considered for restocking. Graver retains the right to refuse return of products which cannot be resold.*

# Special Price Requests

LPF

**Program to help compete in high volume, price sensitive situations.**

*Special Price Agreement (SPA) Numbers MUST be on all PO's*

RSM fills out SPR form.

Approval by Director of Sales.

SPA is good for up to One year.

Must have full information for consideration.

- Competitor
- Product & Pricing
- End-user
- Volume
- Check the O/A that SPA has been applied, no credits if invoiced without SPA# on PO.

# Price List

# LPF

- Prices are typically updated in January of each year. Price Change Notifications are Sent Out in November
- New revisions are published during the year to update product additions or unexpected changes.
- Contain Terms and Conditions (T&C), minimum order requirements, lead times, packaging information, contacts information.

## LIQUID PROCESS FILTERS

2025 Global Price List

January 1st, 2025



Graver Technologies

200 Lake Drive, Glasgow, DE 19702 | [www.gravertech.com](http://www.gravertech.com)  
U.S. Customer Service: 1-888-353-0303 | International: 1-302-731-3568  
Fax: 1-302-369-0938 | E-mail: [lforders@gravertech.com](mailto:lforders@gravertech.com)



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# Lead Times

**LPF**

## Standard Shipment Lead Times

| PRODUCT LINE                                                      | QUANTITY                              | LEADTIME                    |
|-------------------------------------------------------------------|---------------------------------------|-----------------------------|
| <b>Membrane Filters</b>                                           |                                       |                             |
| ZTEC Series, TefTEC Series <sup>1</sup>                           | Up to 100 ten inch equivalents        | 7 working days <sup>2</sup> |
|                                                                   | Greater than 100 ten inch equivalents | Consult factory             |
| Citadel <sup>1</sup>                                              | Up to 10 ten inch equivalents         | 7 working days              |
|                                                                   | Greater than 10 ten inch equivalents  | Consult factory             |
| <b>Pleated Filters</b>                                            |                                       |                             |
| GFC, PMA, PMC, PME, PMG, QCR, QMA, QMC, QSL, QXL, WaterTEC Series | Up to 300 cartridges                  | 5 working days              |
|                                                                   | Greater than 300 cartridges           | Consult factory             |
|                                                                   | Optional Rinse                        | Consult factory             |
| GFP Series                                                        | Up to 150 cartridges                  | 5 working days              |
|                                                                   | Greater than 150 cartridges           | Consult factory             |
| GSS Series                                                        | Up to 100 cartridges                  | 3 weeks                     |
|                                                                   | Greater than 100 cartridges           | Consult factory             |
| High Flow, High Flow GF, High Flow RF                             | Up to 50 cartridges                   | 10 days                     |
|                                                                   | Greater than 50 cartridges            | Consult factory             |
| CelluTEC, CelluTEC HFRF, CelluTEC HF                              | Up to 50 cartridges                   | Consult factory             |
|                                                                   | Greater than 50 cartridges            | Consult factory             |
| <b>Depth Filters</b>                                              |                                       |                             |
| Stratum A, Stratum C, MBC, CMBF — End capped                      | Up to 200 ten inch equivalents        | 5 working days              |
|                                                                   | 201–480 ten inch equivalents          | 10 working days             |
|                                                                   | Greater than 480 ten inch equivalents | Consult factory             |
| Stratum A, Stratum C, MBC, CMBF — NN                              | Up to 1536 ten inch equivalents       | 5 working days              |
|                                                                   | Up to 3072 ten inch equivalents       | 10 working days             |
| <b>Specialty Filters</b>                                          |                                       |                             |
| RTEC G                                                            | Any                                   | Consult factory             |
| TPE                                                               | Up to 10 cartridges                   | Consult factory             |
|                                                                   | Greater than 10 cartridges            | Consult factory             |

**Notes:**

- For orders containing products with different leadtimes, the longest leadtime will apply to all items. If this is not desired then request that the order be split at time of order entry.
- For all Special Length filters consult factory

<sup>1</sup>Pre-wet - Consult factory    <sup>2</sup>5 inch equivalents have a leadtime of 10 working days

- 5 working days for pleated filters
- 7 days for membrane filters – Extra 2 days needed for flush, test and dry
- If needed faster, please ask! No expedite fee but require 1 or 2 day air shipment
- Some specialty items may have longer lead times – consult the price book

# Product Nomenclature

LPF

| QMA NOMENCLATURE INFORMATION |                            |    |                         |                                  |                                  |                             |          |                  |                   |                                 |
|------------------------------|----------------------------|----|-------------------------|----------------------------------|----------------------------------|-----------------------------|----------|------------------|-------------------|---------------------------------|
| Filter Type                  | Retention Rating (microns) |    | Nominal Length (Inches) | End Configuration                |                                  | Gasket or O-Ring            |          | Pre-Rinse Option |                   | Insert                          |
| QMA Series                   | 0.2                        | 5  | –5                      | P                                | Double Open End                  | B                           | Buna-N   | –R               | Factory Pre-Rinse | –I End cap insert for steam-ing |
|                              | 0.45                       | 10 | –9.75*                  | P2                               | 226/Flat Single Open End         | E                           | EPDM     |                  |                   |                                 |
|                              | 1                          | 20 | –10                     | P3                               | 222/Flat Single Open End         | S                           | Silicone |                  |                   |                                 |
|                              | 2.5                        |    | –20                     | P7                               | 226/Fin Single Open End          | T                           | Teflon   |                  |                   |                                 |
|                              |                            |    | –30                     | P8                               | 222/Fin Single Open End          | encap. Viton (O-Rings only) |          |                  |                   |                                 |
|                              |                            |    | –40                     | PX                               | Extended Core                    |                             |          |                  |                   |                                 |
|                              |                            |    | AM                      | Single Open End, Internal O-Ring | T                                | Teflon Gasket               |          |                  |                   |                                 |
| Example: QMA 1–20P3V–R–I     |                            |    | NPC                     |                                  | Double Open End, Internal O-Ring |                             |          |                  |                   |                                 |
| QMA                          | 1                          |    | –20                     | P3                               |                                  | V                           |          | –R               |                   | –I                              |

\*Available only for DOE (P) configuration

## ***Not all options are available with all filters***

- NN and DBG\* only available on STA, STC, MBC, and CMBF\* depth filters
- Steam ring is std on ZTEC and TefTEC and optional on Pleated
- DI water flush is std on ZTEC and TefTEC and optional for Pleated

# Product Nomenclature

LPF

- Spells out exactly what is being ordered
  - Easier to order
  - Easier to check your order acknowledgement
- Part numbers change when special instructions are involved
  - Special packaging
  - Special branding
  - Non-standard component
- Use nomenclature with special instructions
- New "F8" or "FPL" part number will be created



# Product Specifications

## Data Sheets

**LPF**

- Materials of Construction – Use to assure chemical compatibility with customer's process fluids
- Shows available ratings
- Dimensions are fairly industry standard
  - Some old Parker housings only accept 2.5" diameter
- Lengths are "nominal" not actual. Tip to tip varies by end style.
  - No industry standards for length

### Product Specifications

Media: Polypropylene

Gaskets/O-Rings:

Buna-N, EPDM, Silicone, Teflon  
Encapsulated Viton (O-Rings only),  
Teflon (gasket only), Viton

Micron ratings:

0.2, 0.45, 1, 2.5, 5, 10  $\mu$ m

### Dimensions

Nominal lengths:

5", 9.75", 10", 19.5", 20", 29.25", 30", 39", 40"  
(12.7, 24.8, 25.4, 49.5, 50.8, 74.3, 76.2,  
99.1, 101.6 cm)

Outside diameter: 2.7" (6.86 cm)

Inside diameter: 1.0" (2.54 cm)

Surface Area: up to 7.0 ft<sup>2</sup>

# Product Specifications

## Operating Parameters

**LPF**

- Max temp is based on the materials involved. PP begins to soften at 180F.
- Max Differential based on core collapse at various temps. Huge safety factor applied.
- Changeout always recommended at a maximum of 35psid

### Operating Parameters

Maximum operating temperature:  
176°F (80°C)

Maximum differential pressure:  
75 psid @ 70°F (5.2 bar @ 21°C)  
30 psid @ 176°F (2.0 bar @ 80°C)

Maximum reverse pressure:  
40 psid @ 70°F (2.8 bar @ 21°C)

Recommended change-out pressure:  
35 psid (2.4 bar)

# Data Sheet

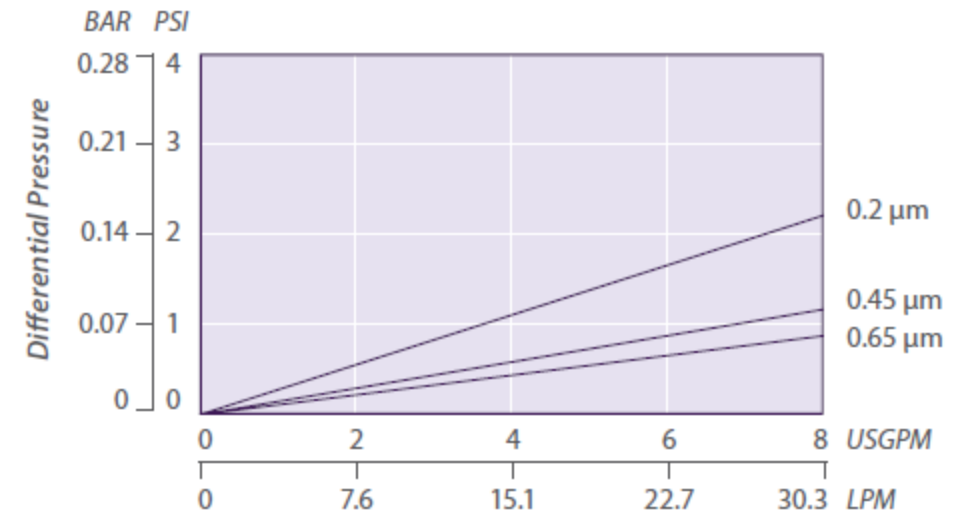
## Flow Curves

- Differential pressure is difference between pressure measured upstream and downstream of the filter and Indicates flow resistance of the media.
- Important data for sizing filter housings
- Typically size at flow of 3 to 5 GPM per 10" and for clean delta P of 1-2 psid.
- If customer has 100 GPM flow – try 5 GPM per ten-inch equivalent (TIE) or a total of 20 TIEs.
- But for 0.2 micron filter, clean delta P is 1.5 psid.
- If increase TIEs to 30, flow per filter is 3.33 GPM and clean delta P is closer to 1 psid.
- Graphs are for water viscosity. Higher viscosity means higher pressure drop. Multiply the delta P by the viscosity in centipoise to adjust.

# LPF

## ZTEC WB FLOW RATE

Typical Flow Rate Clean Water at Ambient Temperature  
(per 10" cartridge)



*For liquids other than water, multiply pressure drop by the fluid viscosity in centipoise*

# Data Sheet

## Integrity Test Specifications

LPF

### TYPICAL BACTERIAL RETENTION

|         |                                                                                    |
|---------|------------------------------------------------------------------------------------|
| 0.2 µm  | LRV for <i>Pseudomon aeruginosa</i> ≥ 11                                           |
| 0.45 µm | LRV for <i>Lactobacillus brevis</i> ≥ 7.6<br>LRV for <i>Oenococcus oeni</i> ≥ 10.0 |
| 0.65 µm | LRV for <i>S. cerevisiae</i> ≥ 8.7                                                 |

### INTEGRITY TEST SPECIFICATIONS

*Minimum Bubble Point values and maximum Diffusive Air Flow (per 10-inch cartridge) values for ZTEC WB filters wet with water:*

| Pore Size | Bubble Point           | Diffusive Air Flow                 |
|-----------|------------------------|------------------------------------|
| 0.2 µm    | ≥ 26 psig<br>(2.1 bar) | ≤ 35 cc/min @<br>21 psig (1.7 bar) |
| 0.45 µm   | ≥ 20 psig<br>(1.4 bar) | 35 cc/min @<br>16 psig (1.1 bar)   |
| 0.65 µm   | ≥ 17 psig<br>(1.2 bar) | ≤ 35 cc/min @<br>14 psig (1.0 bar) |

- Integrity Test – A non-destructive method of evaluating filter performance to manufacturer's published specifications.
- Graver conducts tests internally before shipping to assure filter will perform at required efficiency.
- Outside lab testing/validation conducted to generate bacterial data.
- Test organisms selected for size and industry relevance.

# Certificates of Conformance

LPF

- Assert adherence to specifications
- Cover major claims
- Generic version on protected page of the web site
- Specific Lot available upon request

  
**Graver Technologies**

**QUALITY CERTIFICATE  
CERTIFICATE OF CONFORMANCE  
ZTEC-WB Filter Elements**

|                                            |                                                                                                                                                                                                                                                           |                                                                                                                                                                              |                       |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Product Construction:                      | Support Material:                                                                                                                                                                                                                                         | Polypropylene                                                                                                                                                                |                       |
|                                            | Filter Media:                                                                                                                                                                                                                                             | Polyethersulfone                                                                                                                                                             |                       |
|                                            | Filtration Area:                                                                                                                                                                                                                                          | Approximately 7.5 square feet / 10 inches                                                                                                                                    |                       |
| Minimum Efficiency                         | 0.2, 0.45, 0.65, 1.2 micron                                                                                                                                                                                                                               | 99.98% ISO Fine Test Dust                                                                                                                                                    |                       |
| Sanitization:                              | Product can withstand:                                                                                                                                                                                                                                    | Hot Water at 176°F (80°C) at max of 1 psid for 30 minutes.<br>Inline Steam at 257°F (125°C) at max of 5 psid for 30 minutes.<br>Autoclaving at 257°F (125°C) for 30 minutes. |                       |
| Integrity:                                 | 100% by diffusion in water                                                                                                                                                                                                                                |                                                                                                                                                                              |                       |
|                                            | Pore Size                                                                                                                                                                                                                                                 | Max Diffusion (SCCM)                                                                                                                                                         | Published DF          |
|                                            | 0.2                                                                                                                                                                                                                                                       | < 35 ml/min @ 20 psig                                                                                                                                                        | < 35 ml/min @ 21 psig |
|                                            | 0.45                                                                                                                                                                                                                                                      | < 35 ml/min @ 17 psig                                                                                                                                                        | < 35 ml/min @ 16 psig |
|                                            | 0.65                                                                                                                                                                                                                                                      | < 35 ml/min @ 14 psig                                                                                                                                                        | < 35 ml/min @ 14 psig |
|                                            |                                                                                                                                                                                                                                                           |                                                                                                                                                                              | Published BP          |
|                                            |                                                                                                                                                                                                                                                           |                                                                                                                                                                              | > 26 psig             |
|                                            |                                                                                                                                                                                                                                                           |                                                                                                                                                                              | > 20 psig             |
|                                            |                                                                                                                                                                                                                                                           |                                                                                                                                                                              | > 17 psig             |
| Expiration Date:                           | 4 years from ship date providing filters are stored unopened in a dry and ambient environment. Ideal temperature is 25°C.                                                                                                                                 |                                                                                                                                                                              |                       |
| USP Class VI                               | Meets USP Class VI Biological Test for Plastics                                                                                                                                                                                                           |                                                                                                                                                                              |                       |
| FDA Listed Materials                       | All Materials comply with FDA Title 21 of the Code of Federal Regulations Sections 174.5, 177.1520, and 177.2440 as applicable for food and beverage contact.                                                                                             |                                                                                                                                                                              |                       |
| European Directive for Direct Food Contact | European Regulations No 1935/2004, European Regulation 10/2011 and European Regulation 2023/2006: Tested for migration behavior in direct food contact. Minimal rinse required for use. GMP is utilized to make the filters. Data available upon request. |                                                                                                                                                                              |                       |

Graver Technologies certifies that the ZTEC-WB Filter Elements are produced and distributed according to a Quality Management System that is registered for compliance to EN ISO 9001:2015. All data concerning materials used and production data are documented and accessible under the individual lot number.

200 Lake Drive, Glasgow, DE 19702 302.731.1700 fax 302.731.1707  
[www.gravertech.com](http://www.gravertech.com)

rev 01-2024

# Sample Requests

LPF

- Liberal sampling program intended to provide users the opportunity to evaluate products with no risk.
- Account and application information as well as opportunity size required.

***FREE Including Shipping!***

**GRAVER TECHNOLOGIES, INC.**  
**SAMPLE REQUEST FORM**

**Section A**

|                    |              |
|--------------------|--------------|
| Distributor: _____ | Date: _____  |
| Contact: _____     | Phone: _____ |
| Ship To: _____     |              |

**Section B**

| Filter Description | Qty. | Special Notes / Remarks |
|--------------------|------|-------------------------|
|                    |      |                         |
|                    |      |                         |
|                    |      |                         |
|                    |      |                         |

**Section C**

|                               |
|-------------------------------|
| End User Name: _____          |
| Location: _____               |
| Application: _____            |
| Product Currently Used: _____ |
| Current Price: _____          |
| Trial / Sample Price: _____   |
| Potential Yearly Sales: _____ |
| Completion Date: _____        |

Approval: \_\_\_\_\_

Note: All samples are shipped to the distributor.

# Application Work Requests

LPF

- Request for test support is done through the Application Work (AWR) Request program.
- Start with your Regional Sales Manager (RSM).
- Must be approved before sending in samples.
- Some limits on samples types
  - Compatibility with equipment
  - Hazardous materials
  - Disposal issue.
- Lead time is typically 3 – 4 weeks for report to be issued.



AWR23-

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### Application Work Request

Please complete this form as thoroughly as possible; application detail must be included. Submit to your Regional Sales Manager: [RSM@gravertech.com](mailto:RSM@gravertech.com). Your request will be reviewed within 2 days and, if approved, you will be provided an AWR number. Include a hardcopy of this form with the sample(s) as well as MSDS (if required). Samples should be sent to **Praveen Jana**, Graver Technologies, 200 Lake Drive, Glasgow, DE 19702 (note: may show as Newark, DE).

**Requestor Information**

|                  |                                  |
|------------------|----------------------------------|
| Distributor:     | Location (City, State, Country): |
| Distributor Rep: | Phone Number:                    |

**Customer Information**

|                                              |                                  |
|----------------------------------------------|----------------------------------|
| User:                                        | Location (City, State, Country): |
| User Contact:                                | Phone Number:                    |
| Estimated Annual Sales for This Application: |                                  |

**Application Information**

|                       |                 |
|-----------------------|-----------------|
| Fluid:                | Temperature:    |
| Total Flow Rate:      | Flow Rate:      |
| Viscosity:            | Process Volume: |
| Filtration Objective: |                 |

**Sample Description** (identify what is being sent - qty, part number, type of sample, etc)

**Test Objective** (purpose of the test – i.e. identify Graver equivalent, recommended prefilter, etc.)

**Safety Certification**

In general, Graver will not accept hazardous samples for analysis. You must certify, by signing below, that the sample(s) included in this shipment is(are) microbiologically safe and non-toxic. MSDS of the fluid in contact with the filter must be included (other than water).

Signature, Sample(s) Provider

Date

**RSM Approval**

Date:

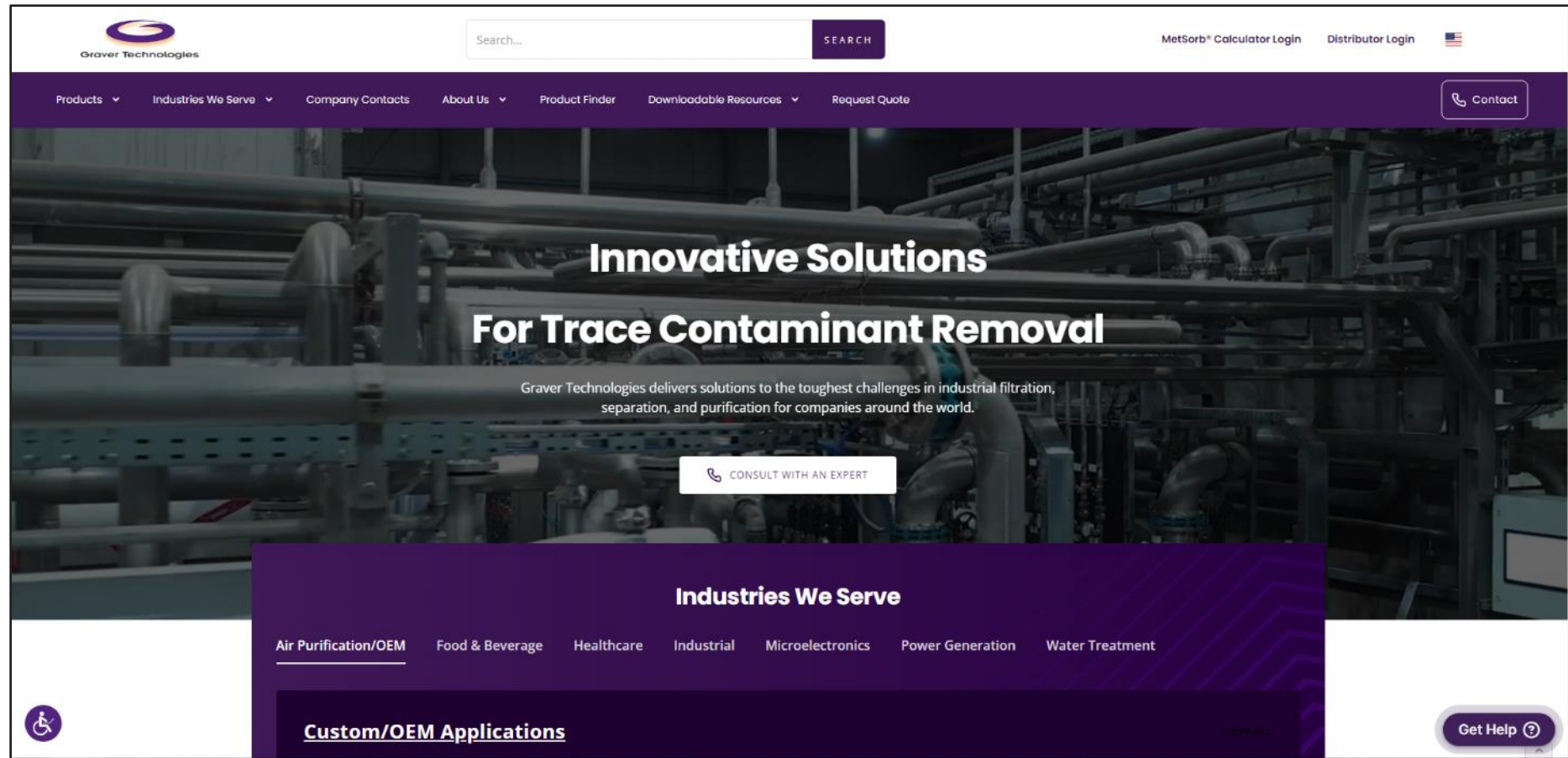
- Any product complaints can be reported to your Regional Sales Manager.
- Performance related issue may be addressed through an AWR if it does not require credit or product defect. Examples would be complaint of short life, questions on contaminants.
- Potential product defects, order errors, shipping damage, etc. can all be addressed through the Customer Action (CA). A reference number (RMA #) is issued and product can be returned under this number.
- CAF or RMA: Must be **approved** prior to any returns
- Any used product must have MSDS attached is other than water/beverage.



Website: [www.gravertech.com](http://www.gravertech.com)

LPF

- Great source for downloading support documents.
- Distributor protected page with additional documents
- Regularly updated – Product updates, Product launches, News



“I hear and I  
forget. I see  
and I  
remember. I  
do and I  
understand.”

*Confucius*



Questions??